

**REMARKS**

Claims 81 to 110 are pending in the application. There are now 4 independent claims and a total of 30 claims. At the time of filing, claim fees for 18 claims in excess of 20 have been paid so that there should be no fee required for the extra 10 claims in excess of 20. However, a fee for one extra independent claim in excess of three is to be paid. Please charge the required fee to deposit account 501199.

**Rejection under 35 U.S.C. 103**

Claims 43-45, 47-70, 75-80 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Filipovsky* (WO 99/39319) and *Ando et al.* (US 5,836,676).

Claims 71-74 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Filipovsky* (WO 99/39319).

The claims 43-45 and 47-80 have been canceled and replaced with new claims 81 to 110.

The new claim 81 is a combination of original claims 43 and 70.

Claim 83 defines a further printed circuit board of the lighting system according to original claim 72.

Claim 85 defines a further printed circuit board of the lighting system according to claim 73.

Claim 88 is based on features disclosed on page 13, last paragraph, of the specification.

Claims 96, 101, 106 relate to the printed circuit boards as defined in connection with the lighting system in claims 81, 83, 85.

In contrast to the prior art, the present invention is not concerned simply with providing hollow bodies to be illuminated with several LEDs, hoping that the illumination result is satisfactory. The subject matter of the present invention is not the use of LEDs for illuminating hollow bodies such as relief letters but a simple and universal illumination system for hollow bodies.

Of course, at the time of the present invention, it was known to use LEDs for illumination purposes and also for illuminating hollow bodies, such as relief letters, as evidenced by the primary reference *Filipovsky*. The present invention aims at providing

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a universally applicable illumination system for illuminating hollow bodies, in particular, relief letters. However, the inventive system enables uniform illumination of various shapes even though only a small number of different printed circuit boards is provided. Even complicated configurations can be illuminated in a satisfactory way. The small number of differently designed printed circuit boards provides a true alternative to the tubular fluorescent lights still widely used presently for illumination purposes in the field of advertising by illuminated signs. LEDs have not yet replaced the known fluorescent lights for the purpose of illuminating advertising signs.

The illumination system according to the invention is designed for easy retrofitting of existing signs and illumination systems so that the owner of hollow bodies to be illuminated, in particular, of relief letters, for example, at a gas station, can simply replace the fluorescent tubes by printed circuit boards having LEDs mounted thereon in accordance with the invention without this requiring specially designed printed circuit boards matched to the respective hollow body.

The illumination system according to the invention is simple in its handling so that even technical lay persons can use the system.

In order to ensure relatively minimal production costs, the illumination system requires only a few different printed circuit boards. In particular, the illumination system according to the invention should not have any special types or shapes of printed circuit boards matched precisely to a certain hollow body, for example, the shape of a relief letter, but should provide simple shapes that can be easily combined to match a shape to be illuminated. This is possible by providing, for example, a combination of three different circuit boards of different size and different LED patterns.

At the time of the invention, there existed no illumination system that could fulfill the above-mentioned requirements even to some degree. At the time of the invention, it was still conventional to illuminate relief letters and other hollow bodies with fluorescent lights even though LED technology was already known at the time of the invention. *Filipovsky* also does not provide a system of combinable circuit boards having different LED patterns in order to use several in an arrangement that is matched to the shape of the hollow body for illuminating the hollow body. *Filipovsky* only shows individually designed illumination

elements each being matched to the shape to be illuminated. A modular system as it is employed according to the present invention is not disclosed.

In particular, there existed no illumination system which in combination with one another could fulfill the aforementioned goals. No conceivable combination of the cited prior art references leads to the illumination system having the features of the current claims.

U.S. 5,836,676 does not concern an illumination system for illuminating hollow bodies; this reference shows a display. The display does not have the shape of a special hollow body (i.e., a relief letter). That what is to be illuminated is not defined by the shape of an object but, like on a computer screen, in that certain elements of the display are switched on. This has nothing in common with illuminating a hollow object by means of an illumination system as the one according to the present invention.

It is the merit of the applicant to have made available for the first time a universally useable illumination system that, with only a few printed circuit boards, enables illumination of very different relief letters and other hollow bodies. The illumination system enables with a few printed circuit boards an ecological and economical replacement of fluorescent lights that are used conventionally in lighted signs for advertisement. For the first time, a solution is provided that, contrary to the prejudice in the prior art, enables illumination of complex configurations, such as relief letters, by means of LED technology in an economically feasible way.

Even though the LED technology has been known for a long time, it is of no practical use in illuminated advertisement prior to the present invention. The LED illumination systems known in the prior art (for example, the one disclosed in U.S. 6,042,248 - see International Search Report) are very complex and therefore prevent a lay person from using the system for illumination purposes when retrofitting existing signs. Moreover, the prior art system according to U.S. 6,042,248 requires special attachment rails so that there is hardly any advantage over existing fluorescent light systems.

In summarizing the above, the prior art *Filipovsky* in combination with U.S. 5,836,676 cannot make obvious the lighting system as claimed comprised of several printed circuit boards having three or six or nine LEDs arranged thereon in different

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patterns which printed circuit boards enable combinations in accordance with a desired shape.

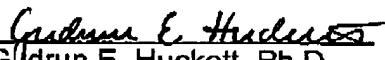
### **CONCLUSION**

In view of the foregoing, it is submitted that this application is now in condition for allowance and such allowance is respectfully solicited.

Should the Examiner have any further objections or suggestions, the undersigned would appreciate a phone call or e-mail from the examiner to discuss appropriate amendments to place the application into condition for allowance.

Authorization is herewith given to charge any fees or any shortages in any fees required during prosecution of this application and not paid by other means to Patent and Trademark Office deposit account 50-1199.

Respectfully submitted on November 19, 2003,

  
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